The following Listing of the Claims will replace all prior versions and all prior listings of the claims in the present application:

Listing of The Claims:

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Previously Presented) An apparatus for thermally cycling samples of biological material comprising:

a thermal block assembly including a plurality of sample holders for receiving samples of biological material;

a heat sink located below the thermal block assembly and thermally coupled to the thermal block assembly to transfer heat away from the thermal block assembly;

a first heat source located between the thermal block assembly and the heat sink, the first heat source thermally coupled to the thermal block assembly to heat the thermal block assembly; and

a second heat source located below the first heat source, wherein the second heat source is radially outside the first heat source, the second heat source thermally coupled to the first heat source to heat at least a portion of the first heat source.

7. (Previously Presented) The apparatus of claim 6 wherein a stacked arrangement of the first heat source, the second heat source and the heat sink provides substantial temperature uniformity among the plurality of sample holders.

8. (Previously Presented) The apparatus of claim 6 wherein the first heat source includes at

least one thermoelectric heater utilizing the Peltier effect for heating the thermal block assembly with substantial temperature uniformity by heating at least a portion adjacent the edges of the thermal block assembly.

9. (Previously Presented) The apparatus of claim 6 wherein the first heat source is located on an outer surface of the heat sink causing a temperature gradient across the heat sink.

10. (Previously Presented) The apparatus of claim 6 wherein the second heat source is located adjacent to at least a portion of the heat sink radially outside of a portion on which the first heat source is located.

11. (Previously Presented) The apparatus of claim 6 wherein a substantial portion of the second heat source is located outside the first heat source.

12. (Previously Presented) The apparatus of claim 6 wherein the second heat source includes at least one resistive element heater.

13. (Previously Presented) The apparatus of claim 6 wherein the first heat source has a higher temperature side and a lower temperature side, the higher temperature side having a higher temperature at an outer periphery of the first heat source than at an inner periphery of the first heat source corresponding approximately to a temperature gradient across the heat sink.

14. (Previously Presented) The apparatus of claim 6 further comprising a first thermal interface element located between the thermal block assembly and the first heat source to transfer heat to the thermal block assembly.

15. (Previously Presented) The apparatus of claim 6 further comprising a second thermal interface element located between the heat sink and a lower temperature side of the first heat source to transfer heat and extend the cycle life of the first heat source.

16. (Previously Presented) The apparatus of claim 6 wherein the thermal block assembly further comprises a thermal block plate, the plurality of sample holders engaging the thermal block plate.

17. (Previously Presented) The apparatus of claim 6 wherein the plurality of sample holders

comprise a plurality of sample wells.

18. (Previously Presented) The apparatus of claim 6 further comprising a spacer bracket wherein the first heat source is positioned in an opening in the spacer bracket.

19. (Previously Presented) The apparatus of claim 6 further comprising a first insulating cover to thermally insulate the plurality of sample holders of the thermal block assembly.

20. (Previously Presented) The apparatus of claim 6 further comprising a third heat source including a plate located above the thermal block assembly to heat a plurality of sample tubes respectively located in the plurality of sample holders of the thermal block assembly.

21. (Previously Presented) The apparatus of claim 6 further comprising a second insulating cover to thermally insulate a plurality of sample tubes respectively located in the plurality of sample holders of the thermal block assembly.

22. (Original) The apparatus of claim 21 wherein the insulating second cover comprises a holding assembly for holding the sample tubes in the thermal block assembly by imparting a compressive load to improve the contact surface area between the respective heat sources and the thermal block assembly, and an insulating plate for the thermal block assembly and a first insulating cover.

23. (Original) The apparatus of claim 22 wherein the holding assembly of the second insulating cover includes a bracket with a clamping portion located adjacent the second cover for imparting the compressive load on the insulating plate.

24. (Cancelled)

25. (Previously Presented) The apparatus of claim 6 wherein the biological material includes a biological reaction mixture.

26. (Previously Presented) The apparatus of claim 6 wherein the second heat source extends beyond the first heat source toward an edge of the thermal block assembly.

27. (Previously Presented) The apparatus of claim 6 wherein the apparatus is capable of

thermally cycling the samples of biological material with substantial temperature uniformity.

28. (Previously Presented) An apparatus for thermally cycling samples of biological material with substantial temperature uniformity comprising:

a thermal block assembly including a plurality of sample holders for receiving samples of biological material;

a first heat source located below the thermal block assembly and thermally coupled to the thermal block assembly to heat the thermal block assembly;

a second heat source located below the first heat source, wherein the second heat source is radially outside the first heat source toward an edge of the thermal block assembly, the second heat source thermally coupled to the first heat source to heat at least a portion of the first heat source; and

a heat sink located below the second heat source and thermally coupled to the thermal block assembly to transfer heat away from the thermal block assembly.

29. (Original) The apparatus of claim 28 wherein a stacked arrangement of the first heat source, the second heat source and the heat sink provides substantial temperature uniformity among the plurality of sample holders.

30. (Original) The apparatus of claim 28 wherein the first heat source includes at least one thermoelectric heater utilizing the Peltier effect for heating the thermal block assembly with substantial temperature uniformity by heating at least a portion adjacent the edges of the thermal block assembly.

31. (Original) The apparatus of claim 28 wherein the first heat source is located on an outer surface of the heat sink causing a temperature gradient across the heat sink.

32. (Original) The apparatus of claim 28 wherein the second heat source is located adjacent to at least a portion of the heat sink radially outside of a portion on which the first heat source is located.

33. (Original) The apparatus of claim 28 wherein a substantial portion of the second heat source is located outside the first heat source.

34. (Original) The apparatus of claim 28 wherein the second heat source includes at least one resistive element heater.

35. (Original) The apparatus of claim 28 wherein the first heat source has a higher temperature side and a lower temperature side, the higher temperature side having a higher temperature at an outer periphery of the first heat source than at an inner periphery of the first heat source corresponding approximately to a temperature gradient across the heat sink.

36. (Original) The apparatus of claim 28 further comprising a first thermal interface element located between the thermal block assembly and the first heat source to transfer heat to the thermal block assembly.

37. (Original) The apparatus of claim 28 further comprising a second thermal interface element located between the heat sink and a lower temperature side of the first heat source to transfer heat and extend the cycle life of the first heat source.

38. (Original) The apparatus of claim 28 wherein the thermal block assembly further comprises a thermal block plate, the plurality of sample holders engaging the thermal block plate.

39. (Original) The apparatus of claim 28 wherein the plurality of sample holders comprise a plurality of sample wells.

40. (Original) The apparatus of claim 28 further comprising a spacer bracket wherein the first heat source is positioned in an opening in the spacer bracket.

41. (Original) The apparatus of claim 28 further comprising a first cover of insulating material to thermally insulate the plurality of sample holders of the thermal block assembly.

42. (Original) The apparatus of claim 28 further comprising a third heat source including a plate located above the thermal block assembly to heat a plurality of sample tubes respectively located in the plurality of sample holders of the thermal block assembly.

43. (Original) The apparatus of claim 28 further comprising a second cover of insulating material to thermally insulate a plurality of sample tubes respectively located in the plurality of sample holders of the thermal block assembly.

44. (Original) The apparatus of claim 43 wherein the second cover comprises a holding assembly for holding the sample tubes in the thermal block assembly by imparting a compressive load to improve the contact surface area between the respective heat sources and the thermal block assembly, and an insulating plate for the thermal block assembly and a first cover.

45. (Original) The apparatus of claim 44 wherein the holding assembly of the second cover includes a bracket with a clamping portion located adjacent the second cover for imparting the compressive load on the insulating plate.

46. (Cancelled)

47. (Original) The apparatus of claim 28 wherein the biological material includes a biological reaction mixture.

48. (Previously Presented) The apparatus of claim 28 wherein the first heat source is radially separated from the second heat source.

49. (Previously Presented) The apparatus of claim 6 wherein the first heat source is radially separated from the second heat source.

50. (Previously Presented) An apparatus for thermally cycling samples of biological material comprising:

a thermal block assembly including at least one sample holder for receiving a biological material;

a heat sink located below the thermal block assembly and thermally coupled to the thermal block assembly to transfer heat from the thermal block assembly;

an upper heat source located under the thermal block assembly, the upper heat source providing heat to the thermal block assembly; and

a lower heat source providing heat to at least a portion of the upper heat source, the lower heat source located under the upper heat source and radially outside the upper heat source.

51. (Previously Presented) The apparatus of claim 50 wherein the lower heat source is radially separated from the upper heat source.

52. (Previously Presented) The apparatus of claim 50 wherein a stacked arrangement of the upper heat source, the lower heat source and the heat sink provides substantial temperature uniformity to at least one sample holder.

53. (Previously Presented) The apparatus of claim 50 wherein the upper heat source includes at least one thermoelectric heater for heating the thermal block assembly.

54. (Previously Presented) The apparatus of claim 50 further comprising a third heat source including a plate located above the thermal block assembly to heat at least one sample holder.